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EXAMINER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MANFRED UEBERSCHAR
and Benjamin Mendez-Gallon

Appeal 2010-003738
Application 10/783,864
Technology Center 1700

Before JEFFREY T. SMITH, LINDA M. GAUDETTE,
and MARK NAGUMO, *Administrative Patent Judges*.

NAGUMO, *Administrative Patent Judge*.

DECISION ON APPEAL

A. Introduction¹

Manfred Ueberschar and Benjamin Mendez-Gallon (“Ueberschar”) timely appeal under 35 U.S.C. § 134(a) from the final rejection² of claims 24-33, 35, 38, 39, 41-44 and 46, which are all of the pending claims. We have jurisdiction. 35 U.S.C. § 6. We AFFIRM.

The subject matter on appeal relates to methods of applying layers of media, such as a barrier layer pre-coat followed by an ink-filled microcapsule-containing top coat for a carbonless copy paper to a paper web. (Spec. 4, 2d full para.) The layers are applied using a dual-curtain applicator that provides continuous curtains of the materials to a moving paper web in a “wet-on-wet application.” (Spec. 2, last para.) As shown in Figure 1 from the 864 Specification, which is reproduced on the following page, the apparatus 10³ applies a pre-coat 20 to a paper substrate 14, and a top-coat 26 is applied to the still wet pre-coat 20. The pre-coat and top-coat are applied as curtains of material, 28 and 30, that fall onto the substrate,

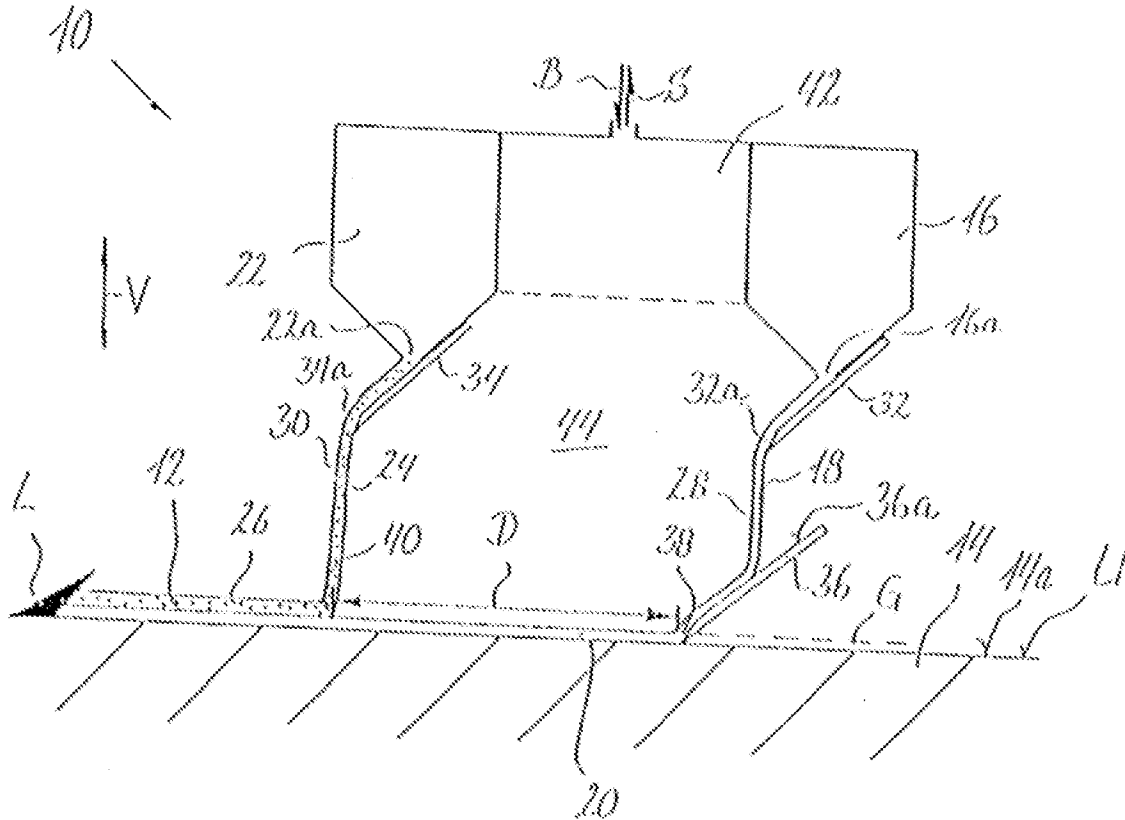
¹ Application 10/783,864, *Material Web Layering Method Using a Curtain Applicator*, filed 23 February 2004, as a continuation of an application filed 21 November 2001, now abandoned, and claiming the benefit of a German application filed 22 November 2000. The specification is referred to as the “864 Specification,” and is cited as “Spec.” The real party in interest is listed as Voith Paper Patent GMVH. (Appeal Brief, filed 23 July 2009 (“Br.”), 3.)

² Office action mailed 26 February 2009 (“Final Rejection”; cited as “FR”).

³ For clarity, labels in to elements in figures are presented in bold font throughout this Opinion regardless of their presentation in the original document.

separated by a distance D sufficient to immobilize pre-coat 20 so it won't be damaged by top-coat curtain 30.

{Specification Figure 1 is reproduced below}



{Figure 1 shows a dual curtain applicator}

Base-coat application medium 18 flows, primarily under the influence of gravity, from first applicator unit 16, out nozzle 16a, and over guide element 32, which extends substantially across the entire width of the falling path to form base-coat curtain 28. Base-coat curtain 28 is intercepted by doctor blade 36, which stabilizes the curtain and leads medium 18 to paper web 14, which is transported from right to left in the figure. Doctor blade 36 is also said to weaken or eliminate air boundary layer G, which is carried along the surface of paper web 14. (*Id.* at 7, *Il.* 22-24.) Top coat application medium 24 flows out of second applicator unit 22 through nozzle 22a, and

over guide element 34, to form top-coat curtain 30, which impinges on base coat 20 a distance D downstream.

Suction/blower box 42 is provided between applicator units 16 and 22, forming an enclosed space 44 that is further defined by curtains 28 and 30, paper web 14, and side-walls that are neither depicted nor mentioned expressly in the 864 Specification. Suction/blower box 42 enables the pressure in enclosed space 44 to be maintained either slightly above the ambient atmospheric pressure (“positive pressure”) or slightly below (“negative pressure”).

In embodiments covered by independent claims 24 and 39, negative pressure in space 44 is said to enhance the wetting of curtain medium 24 to precoat 20 (i.e., base-coat medium 18, applied to paper web 14). (Spec. 6, ll. 8-11.) In embodiments covered by independent claim 46, positive pressure in space 44 is said to stabilize curtains 28 and 30 by reducing their tendency to flutter. (*Id.* at ll. 12-15.)

Representative Claim 24 reads:

- 24. A method of adding layers to a paper web, comprising the steps of:
 - applying at least one first layer of a first application medium to a paper web;
 - applying at least one second layer of a second application medium to said paper web, each of said first application medium and said second application medium being one of a liquid medium and a pasty medium,
 - at least one of said first application medium and said second application medium having a solids content in an approximate range of 2 % by weight to 70% by weight,

at least one of said first application medium and said second application medium having a Brookfield viscosity determined at 100 rev/min of between about 10 mPas and about 2000 mPas,

said first application medium flowing to said paper web in the form of a first curtain, said second application medium flowing to said paper web in the form of a second curtain;

forming a pressure differential in a space partially bounded by said first curtain and said second curtain, said pressure differential being relative to an ambient atmospheric pressure,

wherein said applying at least one first layer step and said applying at least one second layer step are carried out by an apparatus [10], said apparatus including:

a first curtain applicator unit [16] including a first discharge nozzle [16a], said first curtain applicator unit discharging the first application medium through said first discharge nozzle in a form of said first curtain [28] onto a paper web [14], said first curtain moving substantially under the force of gravity; and

a second curtain applicator unit [22] including a second discharge nozzle [22a], said second curtain applicator unit discharging said second application medium through said second discharge nozzle in a form of said second curtain [30] onto said paper web, said second curtain moving substantially under the force of gravity,

said first applicator unit being positioned relative to said second applicator unit such that a spacing of about 100 mm to about 500 mm separates said first curtain and said second curtain,

said first application medium is applied by said first curtain applicator unit that is configured for applying an amount of said first application medium applied to said

paper web, said amount being between about 2 ml/m²
and about 20 ml/m²,

said second application medium is applied to said paper
web at between about 5 ml/m² and about 30 ml/m²:

enclosing said space partially bounded by said first
curtain [28] and said second curtain [30] using said first
curtain applicator unit [16], said second curtain applicator
unit [22], the application medium curtains coming from said
first curtain applicator unit and said second curtain applicator
unit, the paper web [14] and a suction/blower box [42];

positioning a first guideblade [32] immediately adjacent to
said first discharge nozzle [16a];

positioning a second guideblade [34] immediately adjacent to
said second discharge nozzle [22a];

setting a doctor element [36] against a surface of the paper
web, said doctor element intercepting said first curtain [28],
said doctor element leading said first curtain to the paper
web; and

enhancing the wetting of the curtain medium from said
second curtain to the medium from said first curtain on the
web by *providing a negative pressure in said space*.

(Claims App., Br. 24-25; indentation, paragraphing, emphasis, and bold
bracketed element labels to Specification Figure 1 added.)

All dependent claims depend directly or indirectly from claim 24.
Independent claim 39 is substantially similar to claim 24, the difference
being that the “suction blower box” is also referred to as a “pressure-
differential device,” which is required to be “operatively positioned
between” the first and second curtain applicator units. Independent claim 46
is similar to claim 24, the significant difference being that a positive pressure
is required in the enclosed space.

The Examiner has maintained the following grounds of rejection:⁴

- A. Claims 24-33, 38, 39, 41-44 and 46 stand rejected under 35 U.S.C. § 103(a) in view of the combined teachings of Nakamura,⁵ Finnicum,⁶ Bulow,⁷ and Hamaogi.⁸
- B. Claim 35 stands rejected under 35 U.S.C. § 103(a) in view of the combined teachings of Nakamura, Finnicum, Bulow, Hamaogi, and Shay.⁹

Ueberschar presents separate but substantially parallel arguments for each of independent claims 24, 39, and 46. Ueberschar does not substantively argue any of the dependent claims separately, including separately rejected claim 35. (Br. 22.) Accordingly, all dependent claims stand or fall with claim 24. 37 C.F.R. § 41.37(c)(vii) (2007).

⁴ Examiner's Answer mailed 25 September 2009 ("Ans.").

⁵ Hiroaki Nakamura et al., *Process for Producing Pressure-Sensitive Copying Paper*, U.S. Patent 4,230,743 (1980).

⁶ Douglas S. Finnium et al., *Method and Apparatus for Adjusting the Curtain Impingement Line in a Curtain Coating Apparatus*, U.S. Patent 5,206,057 (1993).

⁷ Hans-Georg Bülow and Diana Niesser, *Curtain Coating Apparatus Having a Planar Deflector Surface and Method for Using the Same*, U.S. Patent 5,908,668 (1999).

⁸ Kenji Hamaogi et al., *Curtain Flow Coating Method*, JP 06-262,129 A (1994).

⁹ Gregory D. Shay, *Method of Coating Substrates Utilizing an Alkali-Functional Associative Thickener Containing Coating Composition*, U.S. Patent 5,192,592 (1993).

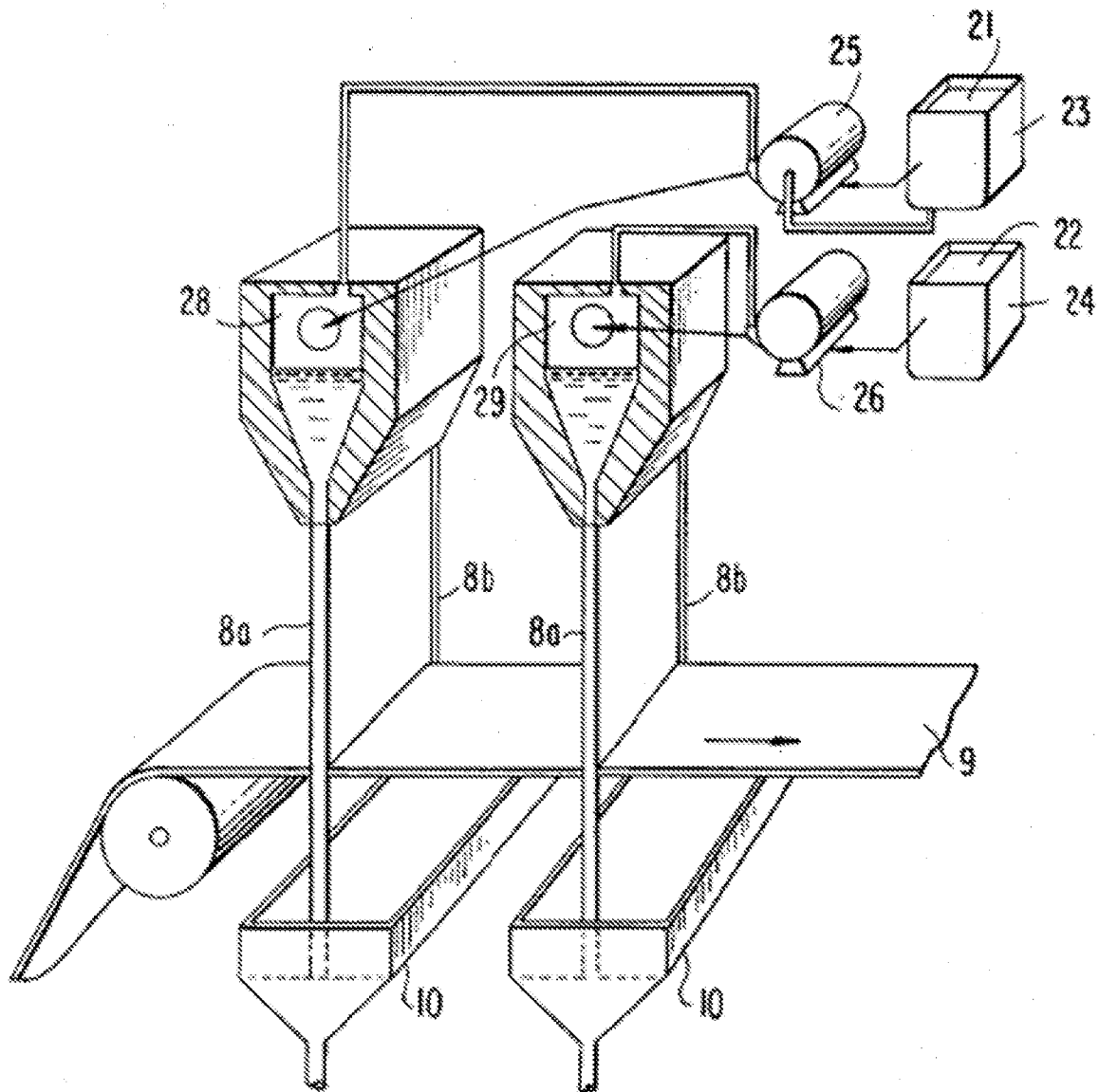
B. Discussion

Findings of fact throughout this Opinion are supported by a preponderance of the evidence of record.

Ueberschar first argues that the rejections of claims 24, 46, and 39 fail because none of the references teach enclosing a space bounded by the elements described in the independent claims, since Nakamura is “obviously open” and Finnium “discloses the existence of a space between the web and the walls.” (Br. 17, 1st full para.; 19, last line, through 20, line 3; 21-22.) Moreover, in Ueberschar’s view, Finnium teaches away from the claimed invention. (Br. 17; Br. 20; emphasis omitted.) Finally, Ueberschar argues that “none of the references teach the combination of a doctor element intercepting a curtain that has flowed over a guideblade.”

The Examiner makes detailed findings regarding various limitations of the independent and dependent claims that Nakamura describes in Figure 4, which is reproduced on the following page, and in the associated text of the patent. (FR 3-7; Ans. 4-7.) The Examiner finds further that Nakamura does not describe certain coating material properties, the distance between the curtains, the guideblades and the doctor element, and the enclosure of the space between the curtains and the pressure-differential inducing device. (FR 7; Ans. para. bridging 7-8; both enumerating differences (1) through (8).)

Nakamura Figure 4 is reproduced below:



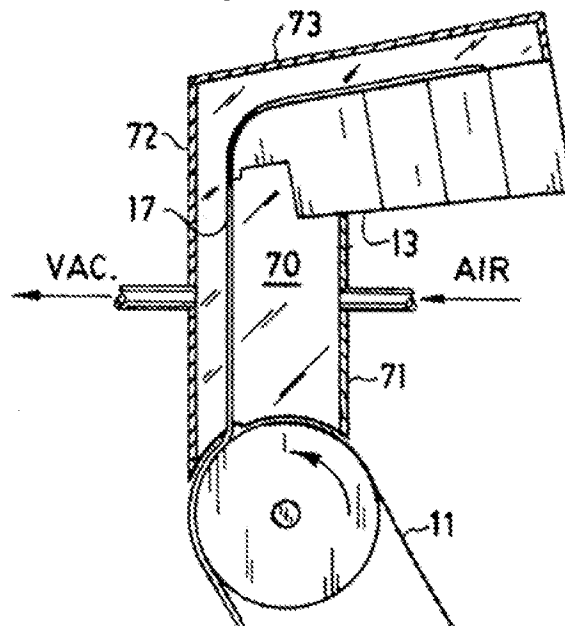
{Figure 4 shows a dual curtain paper coating device}

More particularly, the Examiner finds that Nakamura describes a dual curtain paper coating device, but does not disclose enclosing the space

between the curtains and raising or lowering the pressure in that space by a device located between reservoirs 28 and 29.¹⁰

The Examiner finds that Finnicum discloses the use of pressure to move the line of impingement of a curtain of material on a substrate without disturbing the uniform flow of the curtain. (FR para. bridging 7-8; Br. 8.) Figure 7, reproduced below, shows a coating material curtain 17 impinging on web 11 and provided with side walls 70, and upstream wall 71 and downstream wall 72, which are provided with a gas inlet and a gas outlet, respectively, to adjust the pressure upstream or downstream of the coating material curtain. (Finnicum col. 5, ll. 3-34.)

{Finnicum Figure 7 is shown below }



{Figure 7, slightly truncated from below, shows a curtain coating device that surrounds the curtain with walls and that permits higher pressure behind the curtain and lower pressure in front of the curtain }

¹⁰ Nakamura refers to the reservoirs as “pockets.” (Nakamura col. 6, ll. 20-21, describing similar features in a different apparatus shown in Figure 3.)

The Examiner argues that it would have been obvious to provide the curtains of the coating apparatus described by Nakamura with a pressure differential system as described by Finnicum to shield the curtains as well as to provide proper positioning of the curtain. (FR para. bridging 7-8; Ans. 11-12.) The Examiner argues further that positioning the pressure differential system between the two curtains would have been the most efficient use of the space. (*Id.*) Moreover, in the Examiner's words, "[t]he space would have to be 'enclosed' or 'sealed' to the extent claimed so as to maintain the desired pressure differential as shown by Finnicum." (*Id.* at 12, ll. 19-20.)

Ueberschar's arguments regarding the failure of the references to disclose enclosing the space between the curtains fails to address the Examiner's rejection, which is based on the combined teachings of Nakamura and Finnicum. *Cable Electric Products, Inc. v. Genmark, Inc.*, 770 F.2d 1015, 1025 (Fed. Cir. 1985) ("the suggestion to modify the art to produce the claimed invention need not be expressly stated in one or all of the references used to show obviousness. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.") (internal quote marks and citation omitted.) Ueberschar's argument that Finnicum is somehow inadequate because Finnicum discloses a space between the web and [the bottom of] the walls is fully answered by the Examiner's finding that Finnicum teaches that a pressure differential is maintained. (*See* Finnicum col. 3, ll. 53-63, "[maintaining] a substantially static gas pressure," and col. 4, ll. 20-32, explaining that the minor leakage of air occurs because there is not a perfect

seal between the walls and the web, but that “the leakage is kept low by positioning the walls as close to the web as possible without impeding movement.” To the extent Ueberschar is arguing that the claims require a perfect seal, we note that the claims merely require “enclosing said space” (i.e., between the curtains), and that the space have a negative pressure (claim 24 or claim 39), or a positive pressure (claim 46). Moreover, Ueberschar has not directed our attention to any disclosure in the 864 Specification that supports limiting “enclosing” to an air-tight seal. Indeed, the 864 Specification does not appear to mention side walls corresponding to the sidewalls 70 of Finnicum that Ueberschar criticizes as being inadequate. We are required to read claims broadly, but consistently with the supporting disclosure. The claims only require sufficient enclosure that a pressure differential can be maintained. There appears to be no definition in the supporting 864 Specification of the term “enclosing.” Nor has Ueberschar directed our attention to any operating condition that clearly requires that the enclosure be substantially air-tight. The dictionary definition of “enclosing” offered belatedly (Reply 2)¹¹ is not inconsistent with the broad interpretation given by the Examiner.

Ueberschar urges that Finnicum teaches away from the claimed invention because “the wall precludes the enhancement step^[12] brought

¹¹ Reply Brief (“Reply”) filed 25 November 2009.

¹² We presume Ueberschar means wall 71. In claim 24, the “enhancement step” appears to be the “enhanced wetting” caused by negative pressure in the space bounded by the curtains. (Br. 17, ll. 16-18.) In claim 46, the enhancement step appears to be the stabilization of the curtains caused by positive pressure in the space bounded by the curtains. (Br. 20, ll. 6-15.)

about by the interaction of the space and the two application mediums.” (Br. 17; 20.) Ueberschar appears to assume that persons of ordinary skill in the art would have attempted to incorporate the walls and fixtures of Finnicum without modification when adapting the process of coating paper using the apparatus shown in Nakamura Figure 4. Such assumptions are generally improper. As our reviewing court explained three decades ago,

[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.

In re Keller, 642 F.2d 413, 425 (CCPA 1981). Ueberschar has not come forward with any credible evidence that the level of ordinary skill and creativity is so low. Nor has Ueberschar explained why the rearrangement of enclosing walls and the associated gas plumbing proposed by the Examiner as obvious ways to modify the process described by Nakamura would have been nonobvious or beyond the level of ordinary skill.

Ueberschar’s arguments regarding the flow of the curtain material over the guideblade and the doctor element are not persuasive because they deal with the references individually and therefore fail to explain why the combinations of teachings argued by the Examiner are improper. Thus, it is irrelevant that no single reference teaches a curtain that flows over a guideblade and is intercepted by a doctor element. Ueberschar has not explained why the Examiner erred in finding (FR 8-9 and 12-13; Ans. 8-9 and 13-14) that it would have been obvious to flow the curtain material out

of “pockets” 28 and 29 of Nakamura, onto planar deflector surface 20 of baffle plate 2 of Bülow, and then to intercept the curtain by elastic blade 18 and then down the slant face of the blade to the strip material to be coated, as described by Hamaogi.

We conclude that Ueberschar has failed to demonstrate harmful error in the Examiner’s rejection.

C. Order

We AFFIRM the rejection of claims 24-33, 38, 39, 41-44 and 46 under 35 U.S.C. § 103(a) in view of the combined teachings of Nakamura, Finnium, Bulow, and Hamaogi.

We AFFIRM the rejection of claim 35 under 35 U.S.C. § 103(a) in view of the combined teachings of Nakamura, Finnium, Bulow, Hamaogi, and Shay.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

kmm